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Patent Claims

1. An overvoltage protection device for an electronic apparatus having a plug-in device which has
5 at least one plug-in element and is designed for mounting on a housing of the electronic apparatus, **wherein** a protection board (9), which has a spark gap in order to dissipate overvoltages, is arranged on the plug-in element (3).
- 10 2. The overvoltage protection device as claimed in claim 1, **wherein** the protection board (9) forms the spark gap together with the plug-in element (3).
3. The overvoltage protection device as claimed in claim 2, **wherein** the protection board (9) has an
15 electrically conductive structure (19, 22) which forms the spark gap.
4. The overvoltage protection device as claimed in claim 3, **wherein** the electrically conductive structure of the protection board (9) is in the form of a
20 conductor track, with a zone (27, 28; 31) of the conductor track which is free of solder resist being arranged in the vicinity of an opening (13) which accommodates the plug-in element (5).
5. The overvoltage protection device as claimed in claim 4, **wherein** the zone (31) which is free of solder
25 resist is formed in the solder land (30), which surrounds the opening (13), in the solder resist (29).
6. The overvoltage protection device as claimed in claim 3, **wherein** the electrically conductive structure
30 is in the form of a recess which is free of solder resist, and/or an opening (27, 28) through the protection board (9).
7. The overvoltage protection device as claimed in claim 6, **wherein** the recess and/or opening (27, 28)

which is free of solder resist is arranged in the vicinity of the plug pin (5) to be protected.

8. The overvoltage protection device as claimed in claim 1, **wherein** the protection board (9) has at least
5 two conductor tracks (19, 20; 21, 22) which are located one above the other, are at different potentials, and are routed to a board edge (23), with the thickness of an insulation layer (24, 25) which is arranged between the two conductor tracks (19, 20; 21, 22) being
10 selected such that the spark gap is formed by the uninsulated ends of the two conductor tracks (19, 20; 21, 22) at the board edge (23).

9. The overvoltage protection device as claimed in claim 8, **wherein** the shape of the conductor tracks (19, 20, 21, 22) which are routed to the board edge (23) is
15 selected such that conductor tips (34) are produced at the board edge (23).

10. The overvoltage protection device as claimed in claim 8 or 9, **wherein** the board edge (23) is formed by
20 at least one opening (14) through the protection board (9).

11. The overvoltage protection device as claimed in claim 1, **wherein** the protection board (9) is fitted with a suppression device (10; 15, 16) in order to
25 improve the electromagnetic sensitivity of the electronic apparatus (1).

12. The overvoltage protection device as claimed in claim 10, **wherein** the suppression device (10) is a varistor.

30 13. The overvoltage protection device as claimed in claim 10, **wherein** the suppression device is a capacitor (10) which is arranged outside the housing (1, 2) of the electronic apparatus (1) and is electrically connected firstly to the plug-in element (5) of the
35 plug-in device (3), and secondly to the potential of the electrically conductive housing (1, 2).

14. The overvoltage protection device as claimed in claim 13, **wherein** a first capacitor plate (16) of the

capacitor (10) is arranged in or on the plug-in device (3).

15. The overvoltage protection device as claimed in claim 14, **wherein** the first capacitor plate (16) is
5 formed from the plug-in element (5) itself.

16. The overvoltage protection device as claimed in claim 14, **wherein** the first capacitor plate (16) is formed by one of the conductor tracks (15) which are arranged on the protection board (9) and are in the
10 form of conductor surfaces, which conductor track (15) is arranged alongside the plug-in element (5) and is electrically connected to it, and wherein the electrically formed housing (1), which is connected to ground, of the electronic apparatus is used as a second
15 capacitor plate.

17. The overvoltage protection device as claimed in claim 16, **wherein** the second conductor surface (18) which is arranged on the protection board (9) and is electrically connected to the housing (1, 2) forms a
20 second capacitor surface with the housing (1, 2).

18. The overvoltage protection device as claimed in claim 17, **wherein** the electrical connection between the second conductor surface (15) of the protection board (9) and the housing (1, 2) is produced by at least one
25 fastening means (4), which holds the protection board (9) and/or the plug-in device (3) on the housing (1, 2).

19. The overvoltage protection device as claimed in claim 17, **wherein** insulation (17) is arranged between
30 the second conductor surface (18), which is formed on the surface of the protection board, and the outside of the housing (1, 2).

20. The overvoltage protection device as claimed in claim 17, **wherein** the conductor surface (16) which
35 surrounds the plug-in element (5) is arranged on the protection board (9) such that it can be placed and made contact with on the side of the plug-in device (3) facing the housing (1).

21. A suppression device as claimed in claim 6 or 8, **wherein** a first capacitor plate (16) is provided for each plug-in element (5), and these first capacitor plates (16) are electrically isolated from one another.